Renewable Energy and Battery Storage

Jon Hawkins
Manager, Advanced Technology and Strategy
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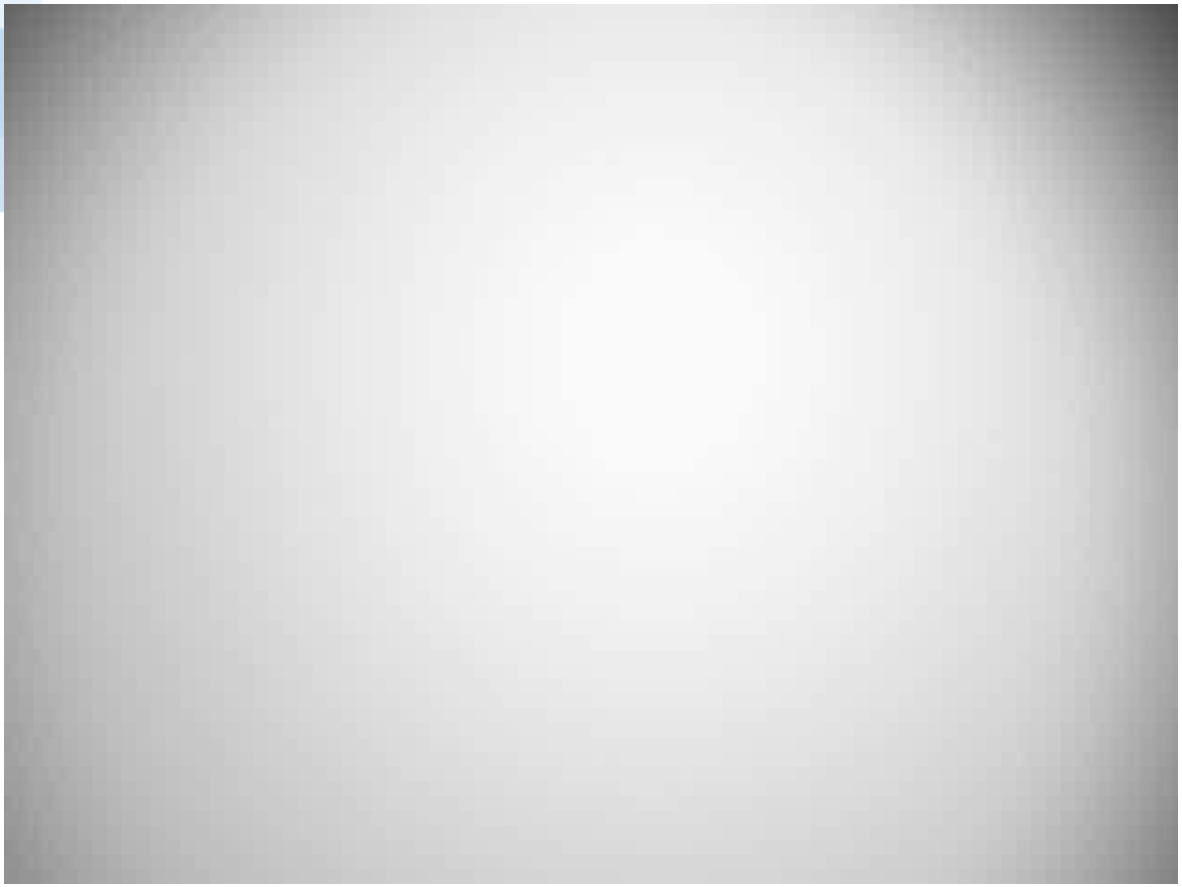
The power to make life better. ***Together.***

PNM

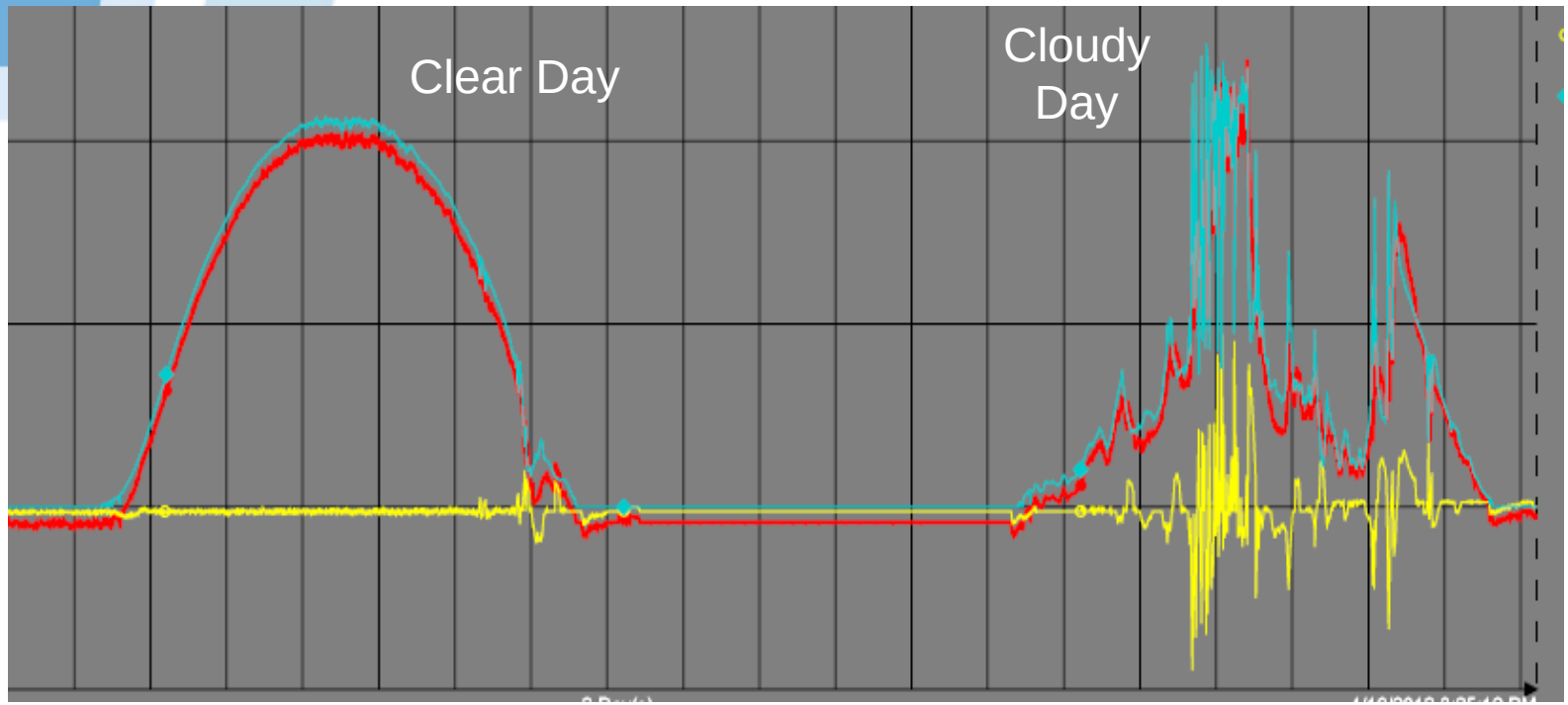
Why Battery Storage?



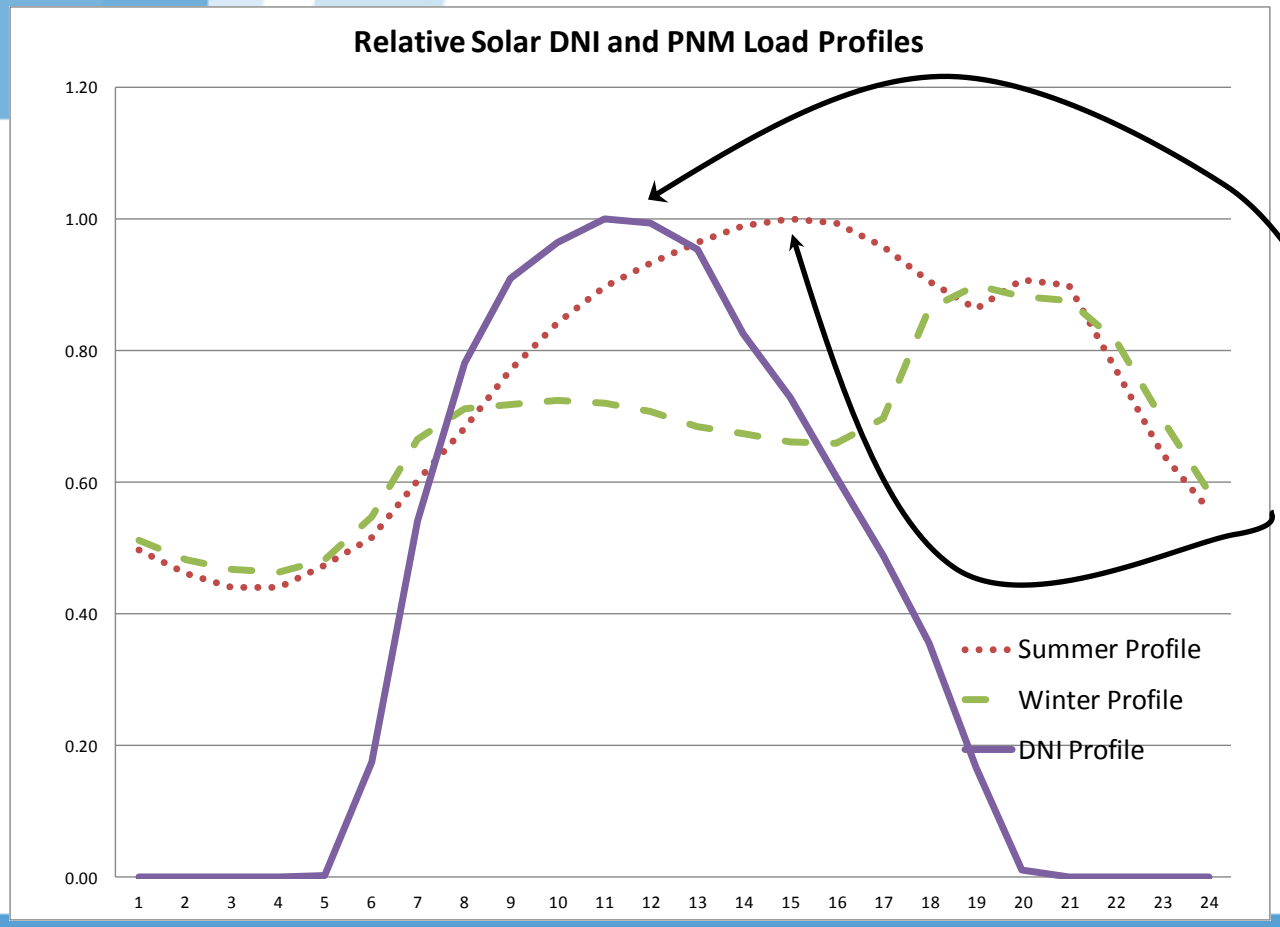
http://www.youtube.com/watch?v=mtkyetyCfSg

Challenge/Opportunity: Solar energy is an intermittent resource with output changing in seconds rather than minutes

Data from Project Site - April 2012



Challenge/Opportunity:
Solar peak does not align with actual system peak



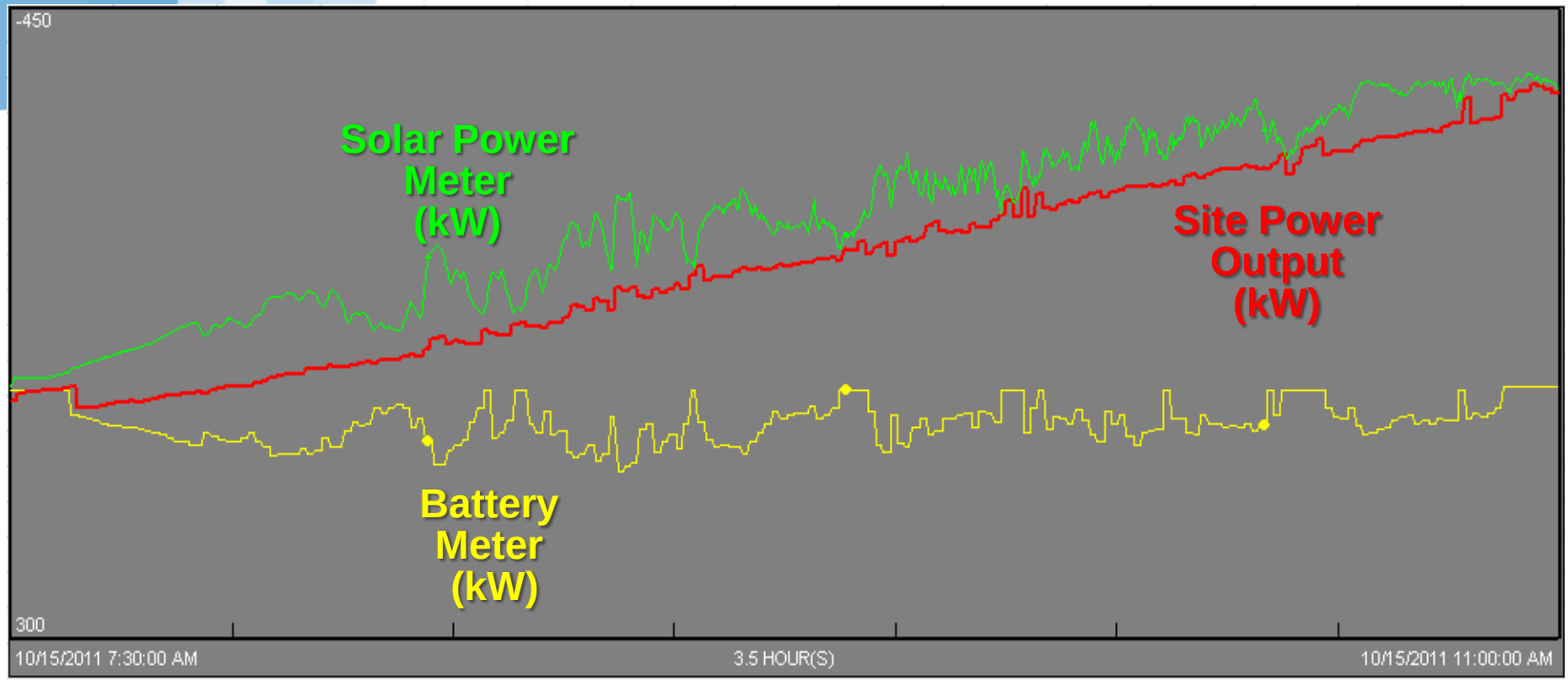
The best solar production occurs ~ 2 to 8 hours prior to:

when the most power is needed on the system

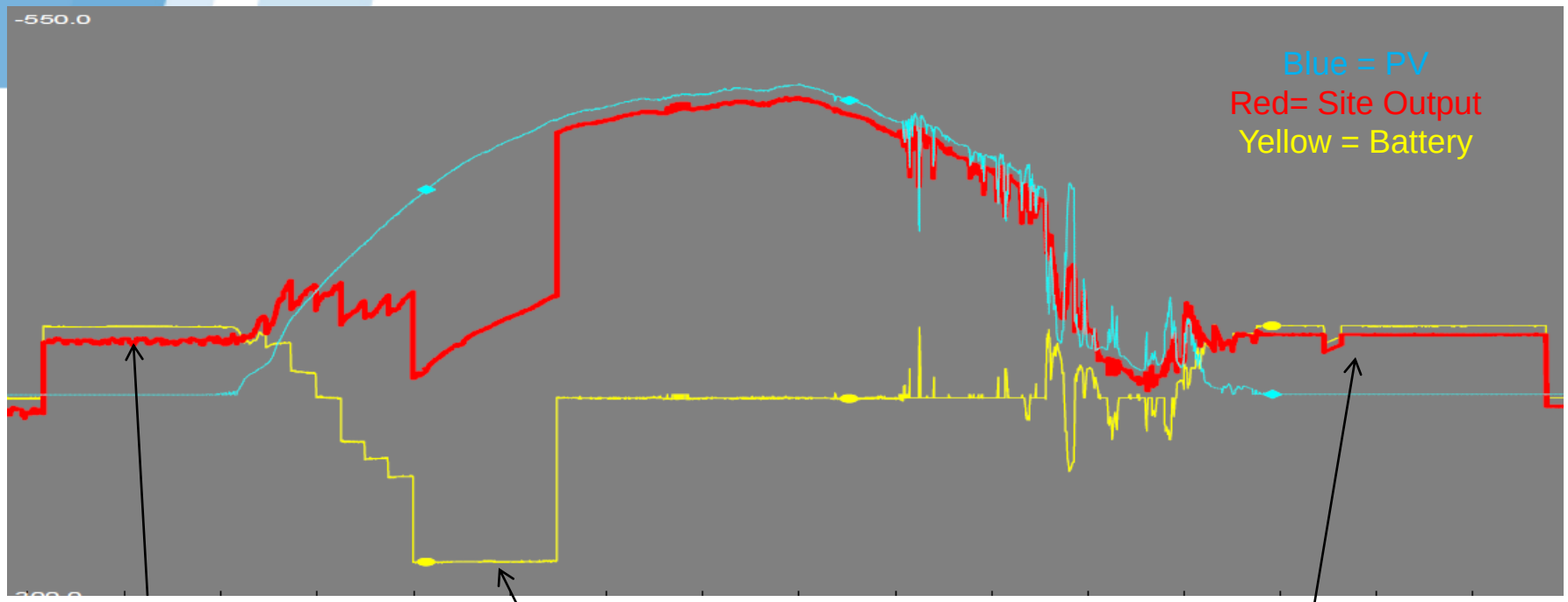
Prosperity Energy Storage Site - Goals

- Prove a battery system can achieve multiple benefits
- Demonstrate ability to smooth PV intermittency
- Create a dispatchable, renewable-based peaking resource
- Successfully demonstrate integration to Utility Operations

Results of Smoothing Tests



Shifting Preliminary Results

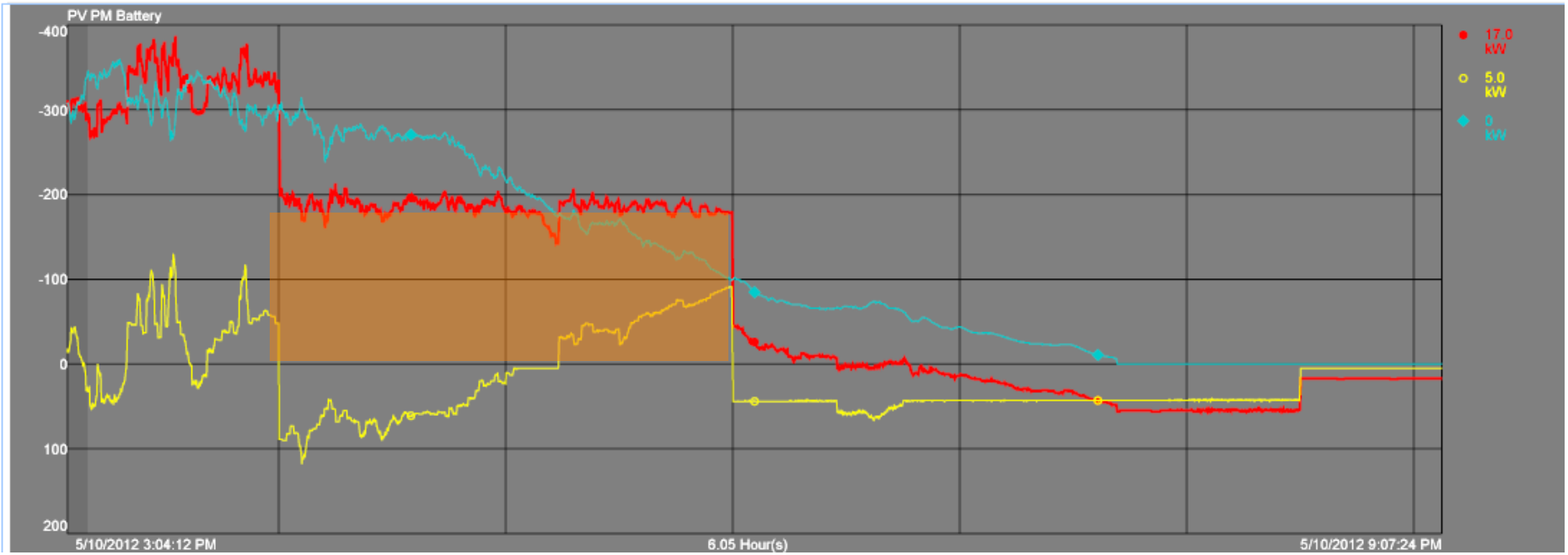


Early morning- producing power before the sun is up

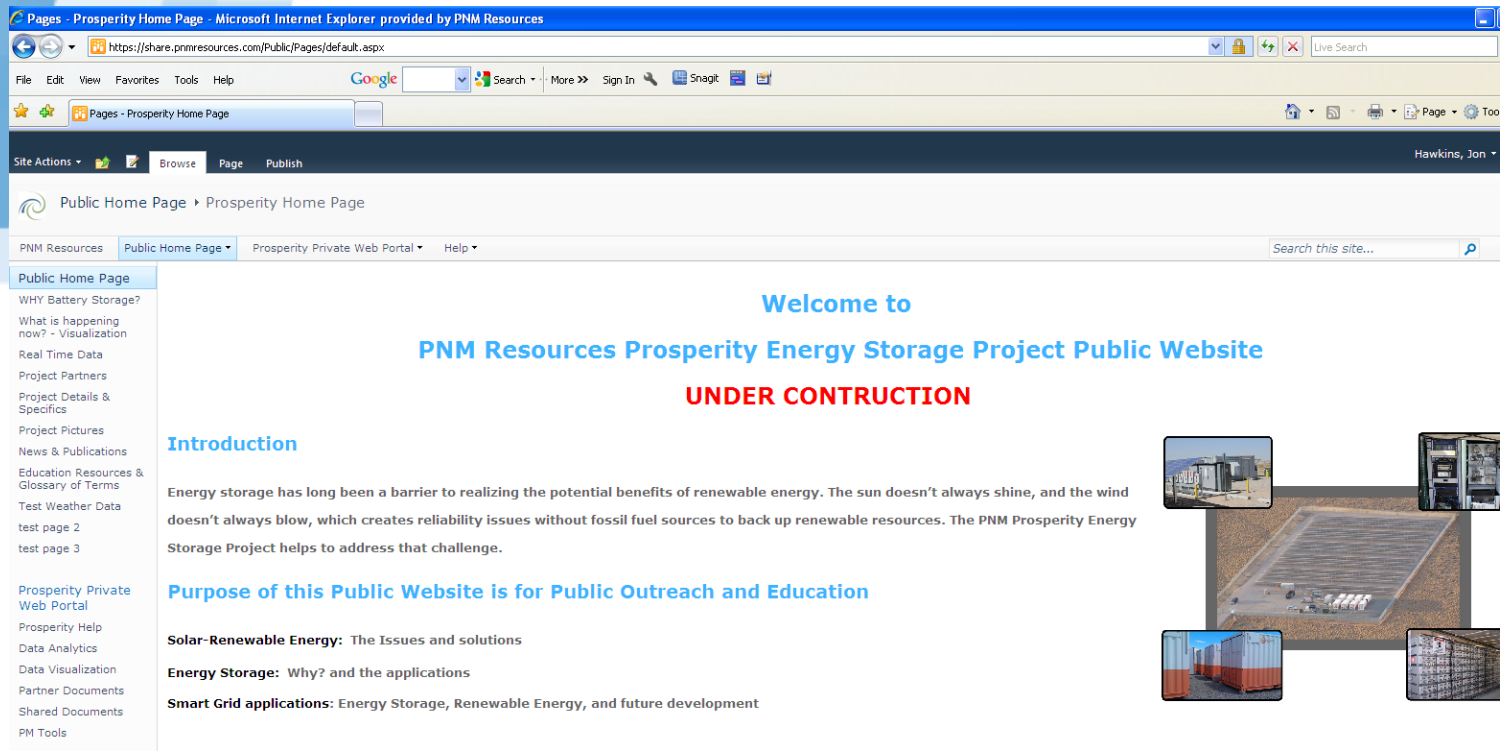
Recharge the batteries from solar

Evening peak - Provide power after the sun goes down

Simultaneous Shifting and Smoothing



Outreach



http://www.pnm.com/systems/battery.htm?source=myenvironment

Challenges

- Cost is still a major challenge for battery technologies
- There has been some storage incentive legislation contemplated at the national level. A bill introduced (S.1845 – Nov. 2011) by Sen. Bingaman and Sen. Wyden (OR) called the Storage 2011 Act to provide investment tax credits. The bill is currently in Committee on Finance. A related bill (H.R.4096) is currently in House Committee on Ways and Means.
- Development of control methodologies to optimize battery life against providing benefits to the grid
- Weather forecasting to optimize dispatch

Significance

- PNM is doing leading edge demonstration of battery technology to support renewable energy integration right here in New Mexico.
- Other national and international utilities are working on projects, but are still talking about what they are going to do. PNM is already realizing results and using those results to improve the capability.
- The work with University of New Mexico and Northern New Mexico College are allowing us to not only develop technology, but also develop the next generation of talent for the future grid.

Questions?

Jon Hawkins

PNMR

Manager, Advanced Technology and Strategy

(505) 241-2189

Jon.hawkins@pnm.com

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